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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/050,601	01/15/2002	Richard W. Cline	XILL118505	4647

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EXAMINER

ROANE, AARON F

ART UNIT PAPER NUMBER

3739

DATE MAILED: 05/18/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	<b>Application No.</b> 10/050,601	<b>Applicant(s)</b> CLINE ET AL.	
	<b>Examiner</b> Aaron Roane	<b>Art Unit</b> 3739	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
  - If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
  - If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
  - Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 26 February 2004.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-58 is/are pending in the application.  
4a) Of the above claim(s) 1-40, 43 and 53-58 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 41, 42, 44-48 and 51 is/are rejected.
- 7) ☒ Claim(s) 49, 50 and 52-54 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☐ All    b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |   |   |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)  | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date <u>4/1/04, 10/20/03</u> . | 6) <input checked="" type="checkbox"/> Other: <u>1<sup>st</sup> IDS 6/19/03.</u>        |

## **DETAILED ACTION**

### ***Election/Restrictions***

Applicant's election without traverse of Species #33, drawn to claims 41, 42 and 44-54 in Paper dated 2/26/2004 is acknowledged.

However, the examiner believes claims 41, 42 and 44-54 are drawn to Species #34, characterized by figures 1B, 2A, 7A, 7B and 5C, where figure 1B shows the multi-mode camera outside of the endoscope body (claim 42). Therefore, the examiner will treat the election as an election of without traverse of Species #34 drawn to claims 41, 42 and 44-54. Claims 41, 42 and 44-54 will be examined.

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 41 and 42 are rejected under 35 U.S.C. 103(a) as being anticipated by Hayashi (USPN 6,070,096).

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Regarding claim 41, Hayashi discloses an apparatus comprising a multi-mode light source (110), an endoscope (100), a high sensitivity color image sensor (low light color image sensor) covered with a color mosaic filter, an excitation light sharp cut filter (302) placed in front of the high sensitivity color image sensor, one or more optical imaging components (301) that projects images onto the high sensitivity color image sensor, an image processor/controller (310) that receives image signals from the low light color image sensor and combines and interpolates image signals from pixels having filters with the same integrated filter characteristics to fluorescence or reflectance light and then encodes the images as video signals; and a color video monitor (160) for displaying superimposed video images from the pixels of the high sensitivity color image sensor, see col. 29, line 8 through col. 32, line 3 and figure 6. It should be noted that the high sensitivity color image sensor is interpreted as to be the same as the low light color image sensor. Hayashi fails disclose that the filter placed in front of the high sensitivity color image sensor filters (blocks or absorbs) light with a wavelength of 470 nm or below while transmitting light with a wavelength of 470 nm or greater. It is very well known in the art to provide the filter in front of the ccd imaging device/sensor with various filtering characteristics including a wavelength cutoff below which the transmission is negligible or blocked and above which transmission is significant. Additionally, these cutoff wavelengths depend a great deal on what dye or fluorescence drug is used in the procedure and particular excitation light source used in the procedure. The dye/drug and the light source are chosen together such that the (characteristic or operating) wavelength of the excitation light source excites the molecules of the dye/drug such that fluorescence

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occurs within the target tissue. Furthermore, it should be noted in an alternate embodiment Hayashi discloses a filter (142) that selectively block/absorbs light at the wavelength of approximately 470 nm, see figures 6-8B and col. 22, line 58 through col. 23, line 6. Therefore at the time of the invention it would have been obvious to one of ordinary skill in the art to modify the invention of Hayashi, as is well known in the art and shown by Hayashi himself, to provide the device with a filter placed in front of the high sensitivity color image sensor filters (blocks or absorbs) light with a wavelength of 470 nm or below while transmitting light with a wavelength of 470 nm or greater in order to distinguish between the extrinsic and intrinsic fluorescence image.

Regarding claim 42, Hayashi discloses a device with the camera attached to the proximal portion such that the camera remains outside the body, see figure 6.

Claims 44-48 and 51 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hayashi (USPN 6,070,096) as applied to claim 42 above, and further in view of Renault (USPN 4,449,535) and in further view of Suzuki (USPN 6,028,622).

Regarding claims 44 and 51, Hayashi further discloses that an optical filter (112) is placed in the light path of the light source, see col. 24, lines 22-41 and figure 13.

However, Hayashi fails to disclose what wavelengths the optical filter blocks/absorbs and what wavelengths the optical filter transmits. It is well known in the art that a mercury vapor lamp provides excitation light with two different wavelengths, a lower wavelength

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excitation component at 366 nm and a higher wavelength component at 720 nm which causes fluorescence at 440 nm to 480 nm as shown by Renault col. 1, lines 11-23. Suzuki discloses an endoscopic fluorescence apparatus and teaches provided not one but two light path filters that provide a cutoff wavelength and transmit wavelengths below the cutoff between 440 nm and 460 nm and below the fluorescence range in order to irradiate the target tissue with excitation light, see col. 1 and 2 and figure 2. Therefore at the time of the invention it would have been obvious to one of ordinary skill in the art to modify the invention of Hayashi, as is well known in the art and shown by Renault to note that the mercury vapor lamp (111 disclosed by Hayashi) provides excitation light with two different wavelengths, a lower wavelength excitation component at 366 nm and a higher wavelength component at 720 nm which causes fluorescence at 440 nm to 480 nm, and as further taught by Suzuki, to provide two light path filters that provide a cutoff wavelength and transmit wavelengths below the cutoff between 440 nm and 460 nm and below the fluorescence range in order to irradiate the target tissue with excitation light.

Regarding claim 45, Hayashi in view of Renault and in further view of Suzuki disclose the claimed invention of green fluorescence light passing through the filter in front of the high sensitivity color image sensor.

Regarding claim 46, Hayashi in view of Renault and in further view of Suzuki disclose the claimed invention. Although Hayashi in view of Renault and in further view of Suzuki are silent as to whether or not red light is transmitted by the filter in front of the

high sensitivity color image sensor, Hayashi discloses a mosaic filter covering the high sensitivity color image sensor, and therefore the filter in front of the high sensitivity color image sensor must be capable of transmitting red light.

Regarding claim 47, Hayashi in view of Renault and in further view of Suzuki disclose the claimed invention, since it has been disclosed that the mercury vapor lamp emits light with two different wavelengths, a lower wavelength excitation component at 366 nm and a higher wavelength component at 720 nm which causes fluorescence at 440 nm to 480 nm, where the red light is in the wavelength range of 590 nm to 750 nm.

Regarding claim 48, Hayashi in view of Renault and in further view of Suzuki disclose the claimed invention of a superimposed image of green fluorescence light and red reflectance light, see col. 29, line 40 through col. 31, line 42.

#### *Allowable Subject Matter*

Claims 49, 50 and 52-54 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

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*Conclusion*

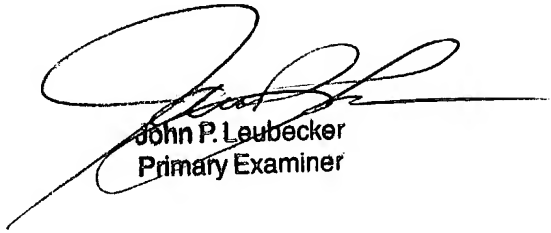
Any inquiry concerning this communication or earlier communications from the examiner should be directed to Aaron Roane whose telephone number is (703) 305-7377. The examiner can normally be reached on 9am - 5pm, Monday - Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Linda Dvorak can be reached on (703) 308-0994. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

A.R.

May 12, 2004



John P. Leubecker  
Primary Examiner